

REMARKS

Claims 1-10, 12, 14-16, 20, 23-25, 27, 30, 34, 35, 38, 91 and 92 were previously pending. Claims 34 and 35 were withdrawn from consideration, and claims 5 and 6 are allowed. By this amendment, claims 34 and 35 are being canceled without prejudice or disclaimer. Claims 1, 2 and 38 are being amended. As a result, claims 1-4, 7-10, 12, 14-16, 20, 23-25, 27, 30, 38, 91 and 92 are pending for examination. No new matter has been added.

Independent Claim 1

Rittman in view of Jain

Claim 1 stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,575,969 to Rittman, III et al. (hereinafter, "Rittman") in view of "A Three-Dimensional Finite Element Model of Radiofrequency Ablation with Blood Flow and its Experimental Validation" by Jain et al. (hereinafter, "Jain").

Claim 1 recites a method of selecting an operating parameter value, and includes receiving a first signal representing a value of a blood flow rate, and receiving a second signal representing a value of an impedance. As amended, claim 1 recites receiving a third signal representing a value of a positive distance from an ablation electrode surface that is not in contact with tissue to a target tissue surface. Rittman teaches only systems and methods where electrodes are embedded in a patient's tissue. See, for example, column 1, lines 15-20, column 4, lines 18-20 and 60-61, column 5, lines 49-54, column 17, lines 41-43, and Figure 8 of Rittman. Accordingly, Rittman does not teach or suggest receiving a signal representing a value of a positive distance from an ablation electrode surface that is not embedded in tissue to a target tissue surface. Jain does not cure this deficiency as Jain also is directed to only electrodes which are in contact with tissue. See, for example, p. 1076, column 1, lines 26-28, p. 1083, column 1, lines 21-27, and Figures 1 and 2 of Jain. Accordingly, withdrawal of the rejection of claim 1 under 35 U.S.C. §103(a) over Rittman and Jain is respectfully requested. Support for the amendment to claim 1 may be found throughout the specification, including, for example, in Figures 3, 4 and 8, and at page 11, lines 24-25.

Each of dependent claims 2-4, 7-10, 12, 14-16, 20, 23-25, 27 and 30 depends either directly or indirectly from claim 1, and withdrawal of the rejections of these claims is respectfully requested for at least the same reasons presented above for claim 1.

Hoey in view of Zhang and Jain

Claim 1 also stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,409,722 to Hoey et al. (hereinafter, "Hoey") in view of Jain and "Noncontact Radio-Frequency Ablation for Obtaining Deeper Lesions" to Zhang et al (hereinafter, "Zhang").

The Office Action applies Hoey as a primary reference and correctly states that Hoey fails to teach a signal related to the distance of an electrode from tissue. According to the Office Action, Zhang teaches maintaining an electrode at a distance from tissue being treated, and the Office Action contends that it would have been obvious to one of ordinary skill in the art to modify the Hoey system to include a spacing element as taught in Zhang.

Regarding the feature of receiving a signal representing a value of a blood flow rate, the Office Action refers to the rejection which includes Rittman as a primary reference, and states that "The Jain et al reference was also added to the rejection involving the Hoey et al reference as the Jain et al teaching is equally applicable to that rejection" (see the final two lines of page 6 of the Office Action). Accordingly, Applicant looks to page 3 of the Office Action which states "Jain et al teach ... that it is generally known that blood flow provided around a probe effects the cooling of an RF electrode, and that it is advantageous to provide a feedback signal of the blood flow around a probe in order to more accurately control the temperature of an RF probe in the body."

As an initial matter, Applicant has been unable to locate in Jain any discussion of controlling the temperature of an RF probe in the body. Instead, Jain describes modeling and experiments in which a constant power is applied for a set amount of time, and the effects of varying fluid flows on temperature distribution in the tissue and the blood are quantified. See, for example: page 1075, second column, lines 33-35; page 1079, second column, lines 3-4; page 1080, caption for Table 3; and page 1084, first column, lines 5-8.

Even if Jain does teach or suggest that it is advantageous to provide a feedback signal of the blood flow around a probe to more accurately control the temperature of an RF probe, which Applicant is not conceding, Zhang teaches away from the proposed combination of Jain with Zhang and Hoey. Among other parameters, Zhang investigates the effect of flow rates on lesion dimensions. Zhang concludes that flow rate does not cause noticeable differences for lesion formation (see p. 222, column 1, lines 1-3). Accordingly, based on the teachings of Zhang, one of ordinary skill in the art would not add a feedback signal of blood flow values as part of controlling lesion formation.

Where teachings of art conflict, the Examiner must weigh the suggestive power of each reference (see MPEP §2143.01 (II)). Accordingly, even if Jain suggests using blood flow rate as part of controlling the temperature of an RF probe, which Applicant is not conceding, the suggestive power of Zhang's teachings outweighs the suggestive power of Jain's teachings in this regard because Jain is directed to a contact method of ablation. Zhang explicitly contrasts the conclusions of the Zhang (non-contact) study with a contact study (Cao et al.). See page 22, first column, lines 4-15, where Zhang points out that while Cao et al. found a link between flow rate and lesion formation, Cao is directed to contact systems rather than non-contact system as in Zhang.

Consequently, because Zhang clearly states that flow rate has no effect on lesion formation in non-contact ablation, one of ordinary skill in the art would not modify the proposed Hoey/Zhang system to include selecting a value for an operating parameter for supplying energy to the ablation electrode as a function of a signal representing a value of a blood flow rate. Accordingly, withdrawal of this rejection of claim 1 is respectfully request for at least this reason.

Each of claims 2, 9, 10, 12, 14-16, 23-25, 30, 38, 91 and 92 depends either directly or indirectly from claim 1, and withdrawal of the rejections of these claims is respectfully requested for at least the same reasons provided above for claim 1.

Independent Claim 38

Claim 38 has been amended to recite selecting a value for a positive distance to set an ablation electrode surface apart from a target tissue surface and out of contact with tissue as a function of first and second signals.

Hoey in view of Zhang and Jain

Claim 38 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Hoey in view of Jain and Zhang. As discussed above, Zhang teaches that flow rate does not cause noticeable differences for lesion formation. Consequently, one of ordinary skill in the art would not modify the proposed Hoey/Zhang combination to select a value for a distance to set an ablation electrode surface apart from a target tissue surface as a function of blood flow rate. Withdrawal of the rejection of claim 38 is respectfully requested.

Each of claims 91 and 92 depends directly from claim 38, and withdrawal of the rejections of these claims is respectfully requested for at least the same reasons provided above for claim 38.

CONCLUSION

Applicant believes the pending application is in condition for allowance and a Notice of Allowance is respectfully requested. If the Examiner believes that minor clarifying amendments to the claim would be helpful, the Examiner is requested to call the undersigned at the telephone number listed below.

A fee is enclosed with this response. In the event the U.S. Patent and Trademark Office determines that a further extension is required, Applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document please charge our Deposit Account No. 23/2825 under Docket No. B1075.71016US01 from which the undersigned is authorized to draw.

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Respectfully submitted,

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